





Science Values and GLOBE Measurements

There are four characteristics needed in GLOBE measurements that will form a foundation for their ultimate contributions to science. They are accuracy, consistency, persistence, and coverage. If all of us contributing to GLOBE can cooperate to produce data sets which have all four characteristics, our contribution to world-wide understanding of our environment will be enhanced.

Accuracy is the foundation of all scientific observation. For us, care in taking the measurements is the first step. Also, the equipment we use and our effort to keep it in good condition are important. Lastly, we all need to strive for perfection in recording data entries and reporting them to the data archive.

Consistency means that the data from any GLOBE school can be used together with the data from all the others to produce a consistent picture of what is happening beyond our own individual sites. The visualizations illustrate this characteristic. Consistency is also important over time. Students at each school are building a climate record of their location. To see changes and trends in our individual environments, the data that have been taken in the past must be directly comparable to the data we are taking today. Faithful adherence to the protocols and careful documentation of changes in our methods and techniques is the best approach to achieving this characteristic.

Persistence is required to keep interruptions in our climate records to a minimum. Occasional measurements are useful, but regular observations provide more information, allowing a greater understanding of what is happening at a measurement site. Also, regular observations are often easier to interpret and are used with greater confidence, especially when unusual phenomena are measured. The longer a consistent climate record is, the more valuable it is. Think of the lucky GLOBE students five years from now who will be able to look at variations and trends in the environment of their school!

Coverage of whole regions, countries, continents, and as much of our planet as possible also will enhance the value of our data sets. The differences in the visualizations where there are many schools versus only a few illustrate this. The properties of our environment vary over many different spatial scales — locally within our 15 km by 15 km GLOBE Study Sites, regionally across our metropolitan areas, states, or countries, and globally. Measuring these properties on these different scales is essential, and as the GLOBE program grows to include more schools in more countries, the importance of our collective contributions will continue to grow.

Individually and collectively, all of us in GLOBE must strive for accurate and consistent measurements made persistently across our global environment.